Update in BPH

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The concept of metabolic health and male pelvic dysfunction has gained traction over the past few years. Moreover, as our population rapidly increases in "size" with recent estimates that almost 1/3 of adult Americans are obese, we are gaining a clearer understanding of these associations. Therefore, it is important for urologists to have a more holistic approach and less organocentric when diagnosing and treating men with components of pelvic dysfunction. Superimposed on these evolving tenets is how lower urinary tract symptoms (LUTS) secondary to benign prostatic hyperplasia (BPH) are closely associated with metabolic dysfunction. Finally, with the advent of new medical algorithms and technological advances in the therapeutic alternatives for BPH, a better understanding of metabolic dysfunction and treatment success has become an important area of investigation. Over the past three years, our course in male pelvic health and BPH has continued a dialogue on the epidemiology, pathophysiology, diagnosis and treatment approaches to male pelvic dysfunction and BPH.

Lower urinary tract symptoms (LUTS) and sexual dysfunction are highly prevalent in men, and that the strong associations between LUTS and sexual dysfunction are independent of age and co morbidities, such as heart disease and diabetes. Current treatment strategies generally target urologic conditions including benign prostatic hyperplasia (BPH), LUTS, and overactive bladder (OAB). While OAB and LUTS are often considered separate conditions, OAB symptoms are a subset of LUTS. Evidence linking disorders of the prostate and bladder with LUTS and sexual dysfunction is irrefutable, but the contribution of metabolic, cardiovascular, and endocrine factors cannot be discounted. What is the underlying association? There are 3 cellular mechanisms that appear to play a role in the development of LUTS and sexual dysfunction. Studies supporting alterations in these mechanisms that are associated with the metabolic syndrome and cardiovascular disease are critical to our understanding of the links between LUTS and erectile dysfunction (ED). Finally, changes in testosterone levels may contribute to metabolic and cardiovascular changes that may promote the development of LUTS and ED. Consideration of these complex relationships may broaden our approach to managing male pelvic health.

There are well recognized data on the associations between metabolic dysfunction, lower urinary tract symptoms and sexual dysfunction. (1) In a recent review, McVary detailed alterations in 3 cellular mechanisms that are frequently associated with LUTS and ED: (1) reduced nitric oxide (NO)/cyclic guanosine monophosphate (cGMP) signaling; (2) increased autonomic activity mediated, in part, by α-adrenergic receptors; and (3) increased Rho-kinase activation. (2,3) In clinical practice, it is difficult to determine the contribution of alterations in the aforementioned mechanisms to ED and LUTS using noninvasive means. As detailed above, much of the evidence linking these mechanisms to LUTS and ED has been obtained from animal models or in vitro studies of human tissue. However, readily evaluable endocrine, metabolic, and cardiovascular parameters may give clinicians clues to possible changes in these complex cellular mechanisms that are linked to ED and LUTS. Studies in animal models suggest that the link between the metabolic syndrome and ED and LUTS may include all 3 of the previously detailed cellular mechanisms: NO/cGMP signaling; autonomic activity, and Rho-kinase activation. Altered glucose regulation, especially in the case of diabetes, is known to reduce endothelial function, which may cause reduced NO/cGMP signaling and ED.
demonstrate autonomic hyperactivity as well as detrusor overactivity and increased micturition frequency. Additionally, increased Rho-kinase activity has been observed in prostatic tissue from spontaneously hypertensive rats. (4,5) The conditions that characterize the metabolic syndrome (ie, type 2 diabetes, obesity, hyperlipidemia, and hypertension) are also associated with low levels of testosterone. (6) In fact, testosterone therapy improved fasting insulin sensitivity and reduced glycated hemoglobin, fasting blood glucose, total cholesterol, and waist circumference in hypogonadal men with type 2 diabetes. (7) The association between testosterone levels and the metabolic syndrome suggests that the high prevalence of ED among men with the metabolic syndrome may be due, in part, to low levels of testosterone. Thus, assessment of testosterone levels, especially in older men, may lead to the identification of nonurologic and urologic conditions underlying LUTS and ED.

Clearly, there are many metabolic, cardiovascular, and endocrine factors that contribute to male pelvic health. These 3 presentations highlight the vastly changing field of diagnostic and therapeutic algorithms for treating men with voiding symptoms as well as concomitant sexual function. Use of appropriate therapies as well as combinations of agents will serve as fertile areas of research in the future.

Clinicians must consider these factors and their relationships to one another when developing treatment strategies for men with LUTS and/or ED. Why is this important for urologists? As a specialty, we are considered the experts in the development of the most effective diagnostic and therapeutic paradigms for male pelvic disorders. We need to take a more global approach to management of these conditions, one that focuses not only on disorders of the bladder and prostate, but also on other readily diagnosed conditions such as diabetes, hypertension, and hypogonadism. A greater understanding of the relationships between these conditions, LUTS, OAB and ED will help us to look outside our specialty for strategies to improve pelvic health in men.

References


Dr. Steven Kaplan graduated from Mount Sinai School of Medicine and trained in Urology at Columbia University and was AUA Scholar between 1988 1990 in Neurowrology. Currently, Dr. Kaplan is Professor of Urology, Chief, Institute for Bladder and Prostate Health and Director, Iris Cantor Men’s Health Center at New York Presbyterian Hospital. He is also a founder of Medidata Solutions Inc., one of the premier electronic data capture companies in the world. He has published more than 620 articles and 170 abstracts and has made over 300 presentations in more than 35 countries. He has been awarded 5 NIH grants and has received over 13 million dollars in research funding.